

### REMARKS

Claims 5, 6 and 8-30 are pending in the application. Of these, claims 16-23 have been withdrawn from consideration. Claim 14 was rejected under 35 U.S.C. §112, second paragraph as being indefinite. Claims 3, 6-9, 14, 15, 24 and 25 were rejected under 35 U.S.C. §103(a) as being unpatentable over Iwasaki et al. Claims 4 and 5 were rejected under 35 U.S.C. §103(a) as being unpatentable over Iwasaki et al. in view of Ono et al. Claims 10-13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Iwasaki et al. in view of Kondo et al. Claims 3, 4 and 7 have been canceled without prejudice or disclaimer. Claims 5, 6, 8, 14 and 24 have been amended, and claims 26-30 have been added, without new matter. Reexamination and reconsideration of the application in view of the amendments and following remarks is requested.

Claim 14 was rejected under 35 U.S.C. §112, second paragraph as being indefinite because it is unclear what "an external" refers to. Claim 14 has been amended to replace "an external" with "outside" to indicate that the container is received from, or delivered to, an area outside the apparatus. As amended, it is respectfully submitted that the rejection of claim 14 under 35 U.S.C. §112 has been overcome.

Claims 3, 6-9, 14, 15, 24 and 25 were rejected under 35 U.S.C. §103(a) as being unpatentable over Iwasaki et al. These rejections are respectfully traversed.

The present invention is directed to a substrate processing apparatus having a plurality of stages. Each stage is capable of supporting containers for transporting substrates. The stages may be used to remove or place substrates in a container. Each stage has a cut-away area extending from one end of the stage. A movable table for carrying containers between stages is able to move vertically through the cut-away area of a stage, lift a container located at the stage and withdraw it from the stage through the cut-away area, in order to transport the container to another stage. The cut-away area is shaped and sized so that only the movable table may pass vertically through the cut-away area, while the container is incapable of passing vertically

through the cut-away area. The movable table is mounted to a guide rail for moving the movable table in a horizontal direction. The guide rail works is coupled to and works in conjunction with a turning mechanism for positioning the movable table below one stage with the guide rail being aligned with the cut-away area of that stage, and for subsequently repositioning the movable table below another stage with the guide rail being aligned with the cut-away area of the other stage.

Independent claim 24 recites a movable table adapted for "moving vertically through the cut-away area of said one of the stages." Iwasaki fails to teach a movable table that is able to pass vertically through a cut-away area of a stage. The Examiner equates the movable table in the present invention with either one of an automatic carrier 38, an inlet delivery port 104, or a port 98 in Iwasaki, equates the cut-away area of the present invention with an outlet delivery port 100 in Iwasaki, and equates the vertical movement of the movable table through the cut-away area in the present invention with the vertical arrows in FIG. 4 of Iwasaki. However, none of these elements in Iwasaki teach a movable table adapted for "moving vertically through the cut-away area of said one of the stages." Much of the confusion arises because figures such as FIG. 4 appear to show certain structural elements working in a particular manner, when a careful reading of the specification reveals something very different.

Although the automatic carrier 38 of Iwasaki may be regarded as a movable table, it never passes vertically through outlet delivery port 100 and never even comes near the outlet delivery port 100, as illustrated in FIGs. 1 and 4, for example. The outlet delivery port 100 is not a cut-away area, but is merely a stage or area on which the wafer cassette may be placed (col. 3 lines 21-22 and 26-28). (The term "port," as used in Iwasaki, is not used according to its common meaning of an "opening," and the dashed line in FIG. 4 used to demarcate the outlet delivery port 100 must not be confused for an opening.) The outlet delivery port 100 is not a "cut in a vertical wall," as stated by the Examiner, but rather one or two adjacent horizontal areas

(the other being inlet delivery port 104). Because the outlet delivery port 100 is a storage area and is not a cut-away area, nothing can pass vertically through it.

In addition, the inlet delivery port 104 of Iwasaki is a portion of stocker shelf 96 (col. 3 lines 12-13), but the inlet delivery port is not movable. As recited in Iwasaki, "stocker crane 80 is actuated to carry cassette 232 on inlet delivery port 104 to the storage site on stocker shelf 96" (col. 5 lines 35-37). In other words, the inlet delivery port 104 is merely a fixed area on which a wafer cassette may be placed. Furthermore, as shown in FIG. 18 of Iwasaki, stocker 234 includes the port 98 which is a portion of stocker shelf 96 and is provided for the entry or exit of a cassette 232 conveyed by inter-stocker transport device 42 (col. 3 lines 1-2, 18-21). Thus, port 98 is also a fixed area that is not movable. Moreover, the vertical arrows in FIG. 4, for example, are for indicating the vertical movement of shield doors 90 and 92 (col. 16 lines 6-11), not to indicate the vertical movement of the port 98.

Most importantly, there is no horizontally aligned cut-away area at all in Iwasaki in which a movable table may pass through. Thus, Iwasaki does not disclose, teach or suggest a movable table adapted for moving vertically through the cut-away area of said one of the stages.

The Examiner further remarked that "SMIF pods . . . are necessarily loaded from the bottom, and require a port through which the wafers are moved in a vertical direction." However, this statement only serves to illustrate the differences between SMIF pods and the present invention. In the present invention, the movable table moves vertically through the cut-away area formed in the stage and lifts up the container of wafers to transfer the container from the stage. Significantly, and unlike SMIF pods, the wafers themselves are never moved in a vertical direction through a cut-away area.

In any case, to further distinguish claim 24 from SMIF pods, claim 24 has been amended to include the limitation that "the cut-away areas are shaped and sized so that the container is incapable of passing through the cut-away areas vertically."

In addition, claim 24 has been amended to recite "a turning mechanism adapted to turn the guide rail in a horizontal plane so that the guide rail is capable of being located at a first position below the first stage with the guide rail being aligned with the cut-away area thereof and is capable of being located at a second position below the second stage with the guide rail being aligned with the cut-away area thereof." Iwasaki contains no disclosure at all related to a guide rail or a turning mechanism for positioning the movable table at or below different ports with the guide rail aligned with a cut-away area of the ports. Even if arm 144 of FIG. 8 could be considered a guide rail, there are no cut-away areas for the guide rail to align with, and furthermore, the arm 144 of Iwasaki is clearly designed to operate above the ports and place wafer carriers on the ports from above the ports, not below the ports as recited in claim 24.

Therefore, because neither Iwasaki nor SMIF pods known in the art teach, disclose, or suggest (1) a movable table adapted for moving vertically through a cut-away area of a stage, (2) cut-away areas shaped and sized so that a wafer carrier supported by the movable table is incapable of passing through the cut-away areas vertically, or (3) a turning mechanism adapted to turn a guide rail in a horizontal plane to position the movable table below one stage with the guide rail being aligned with the cut-away area of that stage, and thereafter repositioning the movable table below another stage with the guide rail being aligned with the cut-away area of the other stage, the rejection of claim 24 under 35 U.S.C. §103(a) as being unpatentable over Iwasaki is respectfully traversed.

In addition, because claims 6-9, 14, and 25 depend from claim 24, the rejection of those claims under 35 U.S.C. §103(a) as being unpatentable over Iwasaki is also respectfully traversed for the reasons provided above with respect to claim 24.

Claims 4 and 5 were rejected under 35 U.S.C. §103(a) as being unpatentable over Iwasaki in view of Ono. Claim 4 has been canceled, so the rejection of claim 4 is now moot. Claim 5 depends from claim 24, and adds the limitation of "a second horizontal moving

mechanism adapted to move the movable table together with the table moving mechanism to a position adjacent to each of the stages." The rejection of claim 5 is respectfully traversed.

Regardless of whether Ono discloses, teaches or suggests the added limitation of claim 5, the fact remains that Ono contains no disclosure at all regarding two other limitations of claim 5 that are recited in claim 24, namely a movable table adapted for moving vertically through a cut-away area of a stage, or cut-away areas shaped and sized so that a wafer carrier supported by the movable table is incapable of passing through the cut-away areas vertically.

Because neither Iwasaki nor Ono disclose, teach or suggest (1) a movable table adapted for moving vertically through a cut-away area of a stage, or (2) cut-away areas shaped and sized so that a wafer carrier supported by the movable table is incapable of passing through the cut-away areas vertically, the rejection of claim 5 under 35 U.S.C. §103(a) as being unpatentable over Iwasaki in view of Ono is respectfully traversed.

Claims 10-13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Iwasaki in view of Kondo. The rejection of claims 10-13 is respectfully traversed.

Regardless of whether Kondo discloses, teaches or suggests the added limitations of claims 10-13, the fact remains that Kondo is concerned only with wafer detection, and contains no disclosure at all regarding two other limitations of claims 10-13 that are recited in claim 24, namely a movable table adapted for moving vertically through a cut-away area of a stage, or cut-away areas shaped and sized so that a wafer carrier supported by the movable table is incapable of passing through the cut-away areas vertically.

Because neither Iwasaki nor Kondo disclose, teach or suggest (1) a movable table adapted for moving vertically through a cut-away area of a stage, or (2) cut-away areas shaped and sized so that a wafer carrier supported by the movable table is incapable of passing through the cut-away areas vertically, the rejection of claims 10-13 under 35 U.S.C. §103(a) as being unpatentable over Iwasaki in view of Kondo is respectfully traversed.

The Examiner also appears to suggest that Hansen et al. (U.S. Patent No. 6,138,694) would render the above-discussed limitations (1) and (2) obvious. However, Hansen fails to disclose limitations (1) and (2). No cutouts below the wafer carrier are disclosed in Hansen. In fact, Hansen teaches a positioning grabber 128 that is extended into solid-bottomed storage location 126 to lift out the wafer carrier, demonstrating that a carrier lifter need not move upwards through a cutout area below the carrier.

It should be noted that new claims 28-30 recite the limitation of a sensing device mounted to the movable table such that the sensing device moves horizontally together with the movable table when the movable table is moving horizontally below the cut-away area of a stage to scan the substrates contained in the container and inspect the condition of the substrates. It should further be noted that Kondo does not disclose, teach or suggest this limitation. In FIG.1 of Kondo, for example, although reference 12a appears to be a table on which the carrier 30 is place, in reality it is a slide block. "[T]he carrier 30 is held in a fixed position by holding means, not shown." (Col. 7 lines 60-66.) The holding means therefore does not include the sensing mechanism (references 11a and 11b). Thus, Iwasaki and Kondo could not be combined to form the invention recited in claims 28-30.

In the unlikely event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Assistant Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. 199372001800.

Respectfully submitted,

Dated: July 30, 2003

By:



Glenn M. Kubota  
Registration No. 44,197

Morrison & Foerster LLP  
555 West Fifth Street  
Suite 3500  
Los Angeles, California 90013-1024  
Telephone: (213) 892-5752  
Facsimile: (213) 892-5454